

REMARKS

The Specification and Abstract have been amended to employ more idiomatic English and to correct minor clerical errors. No new matter has been entered. Pursuant to 37 CFR 1.121 a marked copy of the original specification showing changes made therein accompanies this Amendment.

Claims 1-8 have been rewritten as new claims 12-19, in order to better define the claimed invention and distinguish the invention from the prior art. The method claims 9-11 have been cancelled. No new matter is believed entered by this Amendment.

Before considering the specific art rejections, a brief review of the present invention may be helpful.

The present invention relates to a liquid crystal display apparatus which has color layers provided on a substrate on which a liquid crystal driving element is formed (hereinafter called the "TFT substrate"). If light scattering means is provided outside an opposing substrate in order to display white color, the optical path length from the origin of scattering to the color layers becomes long as indicated by reference symbol "131X" in FIG. 3 of the present Application. This increases the reflected light that passes the color layers of adjoining pixels, causing color mixture and narrowing the chromaticity reproducing band, which results in a reduction in contrast. The present invention solves the aforesaid problem. As means to solve the problem, the present invention has scattering means provided on the liquid crystal side surface of the opposing substrate to shorten the optical path length from the scattering means as the origin of scattering to the color layers on the TFT substrate.

Turning to the rejections based on the art, and considering first the rejection of claims 1-3 and 9-11 as being obvious over Mizobata et al. (U.S. Patent No. 5,724,111) in view of Kadota

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et al. (U.S. Patent No. 5,934,107), as noted supra method claims 9-11 have been canceled from the Application. To the extent that new claims 12-14 have common features with claims 1-8, Applicants respond as follows.

Mizobata et al. shows a structure which has a color filter provided on the opposing substrate and is quite different from the structure of the present invention. The Mizobata et al. structure does not bring about the inherent problem of the related art of the present invention, discussed above and in the present specification, and thus would have no reason to consider any means of preventing the optical path length from becoming longer as the light passes the color layers at the time light enters and the light that is scattered at the opposing substrate is reflected at the TFT substrate and passes the color layers again, which would otherwise make it easier for the light to pass through the adjoining color layers.

The secondary reference, Kadota et al., merely discloses art which has a color filter provided on the TFT substrate and is equivalent to the prior art described in the introductory portion of the present specification.

Neither Kadota et al. nor Mizobata et al. teaches or suggests the solution of the present invention to shorten the optical path length from the origin of scattering to the color layers, thereby suppressing color mixture, narrowing of the chromaticity reproducing band and a reduction in contrast.

Since the primary reference Mizobata et al. is different in structure as above discussed, and therefore does not face the problems of the prior art as discussed above, there would be no reason for one skilled in the art to modify the Mizobata et al. structure by combining the teachings of Kadota et al. There being no suggestion or motivation in Mizobata et al. and Kadota et al. that their teachings should be combined, it is submitted it would not be obvious

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for one skilled in the art to make the modifications suggested by the Examiner. Accordingly, independent claim 12 and claims 13 and 14 which depend directly or indirectly thereon cannot be said to be obvious from Mizobata et al. and Kadota et al.

Turning to the rejection of claims 4-8 as obvious from Mizobata et al. in view of Kadota et al., and further in view of JP '604 to Yukimitsu, claims 4-8 have been canceled in favor of new claims 15-19. To the extent that new claims 15-19 are directed to similar subject matter, Applicants comment as follows.

Claims 15-19 are directly or indirectly dependent on claim 12. The deficiencies of the primary combination Mizobata et al. and Kadota et al. vis-à-vis claim 12 are discussed above. It is not seen that Yukimitsu supplies the missing teachings to Mizobata et al. and Kadota to achieve or render obvious claim 12, or claims 15-19 which depend thereon.

Applicants first submit that this rejection is in error because there is no teaching or suggestion to combine the individual elements of Mizobata et al., Kadota et al., and Yukimitsu in a manner to achieve the instant invention. First, it is submitted that there is no suggestion or motivation in either Mizobata et al., or Kadota et al., to apply Yukimitsu in a manner to achieve the asserted result. Secondly, Applicants submit that the Examiner's asserted use of Yukimitsu is against the weight of the teachings of Yukimitsu. Furthermore,

In the rejection, the Examiner asserts that Yukimitsu's thin film 5 is analogous to the uneven insulating film of the present invention, and further that base material is analogous to either/both the auxiliary film and flattened film. However, Yukimitsu is directed at a reflection prevention film for preventing reflection of light at its surface. From the abstract of Yukimitsu, as well as what is known in the art regarding reflection preventing applications, it would be

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apparent to one having skill in the art that the thin film 5 having uneven shape 6 on its surface would be applied to a surface at which the reflection is to be prevented.

In the field of optics, it is well known to provide an antireflective treatment to the observed side of a transparent member. Conventionally, an anti-reflective treatment comprises a transparent layer formed from a material having an index of refraction that is lower than the index of refraction of the transparent member. Consistent with what is disclosed by Yukimitsu, his thin film layer 5 has a reflective index that is lower than that of the base material 2. From this disclosure, in the context of reflection preventive treatments, this would indicate that the film layer 5 is disposed on the surface at which reflection is to be prevented.

Thus, if one skilled in the art were to apply the teachings of Yukimitsu to the teachings of Mizobata et al. and Kadota et al., the result would be to place the thin film layer 5 having uneven shape 6, such that the film and uneven shape are directed to a view of the display. Accordingly, by the combination of references suggested by the Examiner the uneven film ends up being located on the opposite side of the second substrate, compared to what is required by the claimed invention. This configuration is what is generally illustrated as an uneven shape disposed on the upper insulative plate 2 in FIGS. 9-12 of Mizobata et al.

Therefore, at best combining the teachings of Yukimitsu with those of Mizobata et al. and Kadota et al. would only lead a person having skill in the art to the configuration that the instant invention seeks to avoid, i.e., a light scattering (reflection preventive) mechanism that is outside of the opposite substrate. (See the paragraph bridging pages 4-5 of the originally filed Application.) The fact that the result of making the combination asserted by the Examiner leads to a structure which the instant invention specifically seeks to avoid indicates that there is,

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in fact, no teaching or suggestion to combine the references in a manner by which the claimed invention may be achieved.

As the Examiner is aware, the mere fact that the references may be combined is not sufficient to make out a *prima facie* case of obviousness under 35 USC 103(a). The prior art must contain an actual teaching or suggestion that the references may be combined in a manner by which the claimed invention may be achieved. MPEP 2143.01. As discussed above, the combination of references asserted by the Examiner does not teach or suggest the instant invention. In fact, what is suggested is exactly that which the invention seeks to avoid.

In addition to the lack of a teaching or suggestion to combine, the rejection is also defective in that it does not teach or suggest every claim limitation, as required by MPEP 2143.03. Even ignoring that the result of combining Yukimitsu with Mizobata et al. and Kadota et al. is in opposition to what is claimed, namely, the specifically recited elements of a “flattened film formed on the surface of the uneven insulation film” and an “auxiliary film formed on a side of the uneven insulating film”. Based on the abstract of the invention, the “reflection preventive film is a laminated film in which an optical thin film layer 5 having a reflective index lower than that of a base material is provided to an uneven base material 2”. Accordingly, it can only be understood that the base material 2 is the substrate off which reflection is to be prevented. The only element of the combined teachings of Mizobata et al. and Kadota et al., as asserted by the Examiner, that the base material may reasonably correspond to is the upper insulative plate, referenced as 2 in Mizobata et al. The Examiner asserts that Yukimitsu teaches only a single film applied to the base material 2. Therefore, if the Examiner asserts that the thin film layer 5 corresponds to the uneven insulating film of the

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present invention, then the Examiner has failed to indicate a teaching of either a flattened film, or an auxiliary film.

However, if in the alternative, the Examiner asserts that base material 2 corresponds to the claimed uneven insulating material, as seeks to apply thin film layer 5 as either an auxiliary film or a flattened film, then the Examiner has pointed to a teaching without a context. That is, simply pointing to a two-layer system without any indication of how the two layers may interact in a more complicated laminate, there is no basis for asserting a teaching or suggestion to combine Mizobata et al. and Kadota et al. with Yukimitsu in a manner to produce the claimed invention.

Consistent with the above comments, even if a person skilled in the art were to combine the teachings of Yukimitsu with those of Mizobata et al. and Kadota et al., in keeping with the only reasonable understanding of the teachings of Yukimitsu, the thin film 5 having the uneven shape 6 would be disposed on a side of the substrate that is nearest a person observing the liquid crystal display. That is, the reflection preventive film according to Yukimitsu would be disposed on a surface of the second substrate that is opposite, or away from the liquid crystal material. This is the exact opposite of what is required by the claimed invention. Accordingly, the combined teachings do not teach or suggest the instant invention as claimed.

Furthermore, Yukimitsu teaches a thin film layer 5 having an uneven shape 6, the uneven surface being outwardly directed, and the thin film layer 5 being disposed on a base material. Such a base material can only reasonably be analogous to the claimed transparent insulation substrate. Yukimitsu cannot, therefore, be considered to teach or suggest an “an auxiliary film formed on an uneven insulation film”. Nor can Yukimitsu be considered to teach

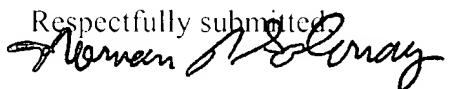
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or suggest a flattened film disposed on the uneven insulation film. Thus, all of the elements of claims 15-19 cannot be found in the asserted combination of references.

It is therefore submitted that all of the claims are allowable over the art.

In the event that there are any fee deficiencies, or additional fees are payable, please charge (or credit any overpayment) Deposit Account No. 08-1391 as necessary.

Respectfully submitted,


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I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on April 26, 2002 at Manchester, New Hampshire.

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